H11027

NOAA FORM 76-35A

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

DESCRIPTIVE REPORT

Type of Survey ***Hydrographic/ Side Scan Sonar/ Multibeam***

Project No. **OPR-D324-WH**

Registry No. **H11027**

LOCALITY

State **Virginia**

General Locality **North Atlantic Ocean**

Sub-locality **6 Nautical Miles Northeast of Cape Henry**

2001

CHIEF OF PARTY
LCDR Gerd F. Glang

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DATE July 13, 2002

NOAA FORM 77-28
U.S. DEPARTMENT OF COMMERCE
(11-72)
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

REGISTRY NUMBER:

H11027

HYDROGRAPHIC TITLE SHEET

INSTRUCTIONS: The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

State: ..... **Virginia**

General Locality: ..... **North Atlantic Ocean**

Sub-Locality: ..... **6 Nautical Miles Northeast of Cape Henry**

Scale: ..... **1:10,000** Date of Survey: ..... **4/02/01 to ~~4/17/01~~ and 7/10/01**

Instructions Dated: ..... **2/02/01** Project Number: **OPR-D324-WH**

Vessel: ..... **NOAA Ship WHITING, S-329**

Chief of Party: ..... **Lieutenant Commander Gerd F. Glang, NOAA**

Surveyed by: ..... **WHITING Personnel**

Soundings by: ..... **Odom Echotrac DF3200 MK II Echosounder**

Graphic record scaled by: ..... **WHITING Personnel**

Graphic record checked by: ... **WHITING Personnel**

Protracted by: ..... **N/A** Automated Plot: ..... **HP-750C** ***(Field)***

Automated Plot: .... HP DesignJet 2500CP (Office)

Verification by: ..... **Atlantic Hydrographic Branch** ***Personnel***

Soundings in: ..... **~~Meters~~** ***Feet*** **at MLLW**

Remarks:

1) All Times are UTC.

2) This is a Basic Hydrographic Survey.

3) Projection is UTM Zone 18.

4) Red notes in the Descriptive Report were made during office processing.

AWOIS/SURFV 2/25/02, SSI

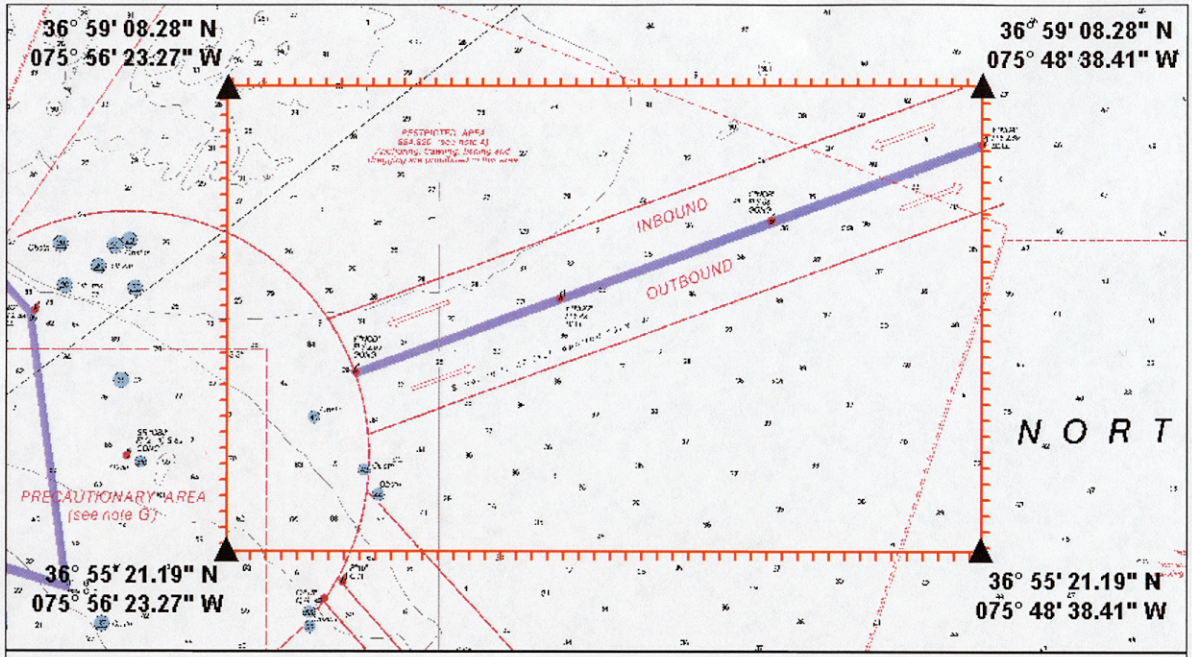
TABLE OF CONTENTS

A. AREA SURVEYED

This hydrographic survey was conducted in accordance with Hydrographic Survey Letter Instructions OPR-D324-WH, Northeast Approach to Chesapeake Bay, Virginia. The instructions were dated February 2, 2001. No changes were made to the letter instructions.

This Descriptive Report pertains to survey H11027, which includes the Northeast Approach to Chesapeake Bay. This is also known as sheet "A" of project OPR-D324-WH as prescribed by the letter instructions.

For complete survey limits, see the chart on the following page (Fig 1).



Chartlet 1 of 1

Chart 12208, 7th Edition, December 5th, 1998, Scale 1:50,000, Approaches to Chesapeake Bay

This chartlet may not be up to date with the latest Local Notice to Mariners information.
NOT FOR NAVIGATION.

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

Project: *OPR-D324-WH*
Survey: *H-11027*
State: *Virginia*
Locality: *North Atlantic Ocean, Virginia*
Sub-locality: *6 Nautical Miles Northeast of Cape Henry*
~~Survey Scale: 1:10,000~~

Soundings Displayed in: *Feet*
Soundings Acquired in: *Meters*
Sounding Datum: *MLLW*
Horizontal Datum: *NAD 83*
Projection: *UTM 18*
Central Meridian: *075° 00 00*
~~Scale Factor: 0.9996~~

NOAA Ship WHITING
LCDR Gerd F. Glang
Commanding
April 2 to
April 17, 2001

B. DATA ACQUISITION AND PROCESSING *See also the evaluation report*

B.1. EQUIPMENT

Data were acquired by NOAA Ship WHITING and survey Launches 1005 and1014. These launches are NOAA's standard 8.5-meter aluminum Jensen vessel with a typical 0.5-meter transducer draft. All vessels were configured as described in the Data Acquisition and Processing Report (DAPR) for this project. A brief description of these configurations are listed below.

NOAA Ship WHITING acquired side scan sonar (SSS) data and vertical beam echosounder data (VBES). Side scan sonar data were acquired with an Edgetech 272-T side scan sonar towfish as described in *Configuration 1: Edgetech Towed Operations* of the project DAPR. VBES data were acquired with an Odom Echotrac DF3200 MKII echosounder.

Launch 1005 acquired SSS and VBES data. Side scan data were acquired with an Edgetech 272-T side scan sonar towfish and VBES data was acquired with an Odom Echotrac DF3200 MKII echosounder.

Launch 1014 acquired High Speed/ High Resolution side scan sonar data and VBES data. The Klein 5000 sonar was hull mounted during data acquisition due to the shoal water present in the northwest portion of this survey. VBES data was acquired with an Odom Echotrac DF3200 MKII echosounder.

From April 2, 2001 to April 17, 2001, SSS and VBES data were acquired by NOAA Ship WHITING and survey Launches 1005 and 1014. Survey operations resumed on July 10, 2001 for a single item investigation (See Section D. AWOIS Items and Significant Contacts). Survey Launch 1005 acquired Shallow Water Multibeam (SWMB) data over this item. This single item investigation was the only use of SWMB during survey H11027.

No unusual vessel configurations were employed on this project. Refer to the project DAPR for exact vessel configuration information.

NOTE: CARIS does not use fix numbers in its system of annotation. Time is the major reference system common throughout all HDCS data. Fix numbers are found only in the CARIS Vertical Beam Editor, and are used for reference to the VBES paper trace.

B.2. QUALITY CONTROL

Side Scan Sonar Quality Control

Daily confidence checks were made with each system by observing the outer ranges of the sonar images. A good check consisted of distinguishing contacts or sand waves across the entire range of the side scan trace.

Crosslines

41.16 nautical miles of crosslines were run comprising 11.6% of the 355 nautical miles of SSS mainscheme data. Mainscheme data was defined for this survey to be both the 100% and 200% coverages. Crossline to mainscheme comparisons were made in MAPINFO 5.0. No differences greater than 5 percent of the shoalest depth were observed.

Junctions ***See also the evaluation report***

H11027 junctions with survey H11016, conducted by NOAA Ship RUDE in 2000. H11016 included Shallow Water Multibeam (SWMB) coverage of a portion of both the inbound and outbound channels of the Northeast approach to Chesapeake Bay traffic separation scheme. Sounding agreement between H11027 and H11016 was excellent. The greatest discrepancy observed between surveys was one foot.

B.3. CORRECTIONS TO ECHO SOUNDING ***See also the evaluation report***

During post-processing, substantial heave errors were noted in the VBES data WHITING had acquired when compared to data acquired by both launches. Upon further investigation, it was determined that the Black Box data broadcaster was causing time latencies in the transmission of heave, pitch and roll data of up to 29 seconds. To further complicate this problem, the latency was not constant, but drifted over time and varied among line files.

The Hydrographic Systems and Technology Programs (HSTP) office (N/CS11) was contacted and made aware of this problem. HSTP then worked with CARIS to modify the Vessel Configuration File software in HIPS to allow a heave time latency to be applied, and to graphically apply those latencies correctors to the data. A time entry in the WHITING VCF (WHVB) was made for each line of WHITING VBES data. Each time entry contains an average heave time latency specific to that line of data. Since heave latency drifted over time, latency correctors were selected to minimize heave latency over the entire line. All WHITING data were corrected, line by line, in this way. Copies of this VCF are included in the HDCS digital data transmitted with this survey.

Aside from the corrections mentioned above, all sounding data were corrected as described in the project DAPR. A table listing all the sound velocity casts is located in Separate III.*

Data filed with original field record.

C. VERTICAL AND HORIZONTAL CONTROL *See also the evaluation report*

Vertical Control

The tidal datum for this project is Mean Lower Low Water (MLLW). The operating tide station at Chesapeake Bay Bridge Tunnel, VA (863-8863) served as control for datum determination.

Tidal zoning for this survey is consistent with the letter instructions. The zones used for this survey are as follows:

STATION	CORRECTOR (min)	RATIO	REFERENCE
ATL724	-18	x1.35	863-8863
ATL725	-36	x1.35	863-8863
SCB1A	-18	x1.27	863-8863

A Request for Approved Tides was sent to N/OPS1 on April ~~12~~ 24, 2001 (Appendix IV)*. Verified tides for the survey dates and area were posted by N/OPS1 and subsequently applied to all sounding data.

Horizontal Control

The horizontal datum used for this survey is the North American Datum of 1983 (NAD 83), projected using a UTM zone of 18.

Sounding positional control was obtained using Global Positioning System (GPS) corrected by the U.S. Coast Guard differential GPS reference station. The primary differential beacon used for this survey was Cape Henry, VA. No horizontal control stations were established for this survey.

Daily monitoring of the horizontal dilution of precision (HDOP) and the positional dilution of precision (PDOP) were monitored by all vessels. Neither value exceeded 4.00, and adequate satellite coverage was maintained throughout the survey. All positioning equipment was operated in a manner consistent with the manufacturers requirements and as described in the DAPR. Atmospheric interference, in the form of solar flare activity, disrupted POS/MV calibration on Launch 1005. Unusually high PDOP values were observed on Launch 1005 during initial POS/MV calibration. This was an isolated incident and did not affect data acquisition or horizontal accuracy. There were no equipment malfunctions which affected the positional quality of the data.

Data filed with original field records.

D. RESULTS AND RECOMMENDATIONS

D.1. CHART COMPARISON *See also the evaluation report*

There are six charts affected by this survey:

12205, 26th edition, December 16, 2000, 1:80,000
12207, 20th edition, April 4, 1998, 1:~~25,000~~ ***1:80,000***
12208, 7th edition, December 5, 1998, 1:~~10,000~~ ***1:50,000***
12221, 71st edition, August 5, 2000 1:~~25,000~~ ***1:80,000***
12222, 41st edition, December 16, 2000 1:~~25,000~~ ***1:40,000***
12280, 1st edition, May 25, 1996 1:~~25,000~~ ***1:200,000***

General Agreement with Charted soundings

Northeast Approach to Chesapeake Bay Traffic Separation Scheme

Soundings taken within the channel are generally shoaler than the charted depths. The hydrographer recommends charting the survey soundings*. Of particular note are the following charting recommendations for Chart 12208: * ***Concur***

Surveyed Depth (ft)	Charted Depth (ft)	Latitude	Longitude
24 (DTON #2)	29	36° 57' 29.08" N	075° 55' 56.89" W
34	36	36° 56' 43" N	075° 54' 37" W
32	34	36° 57' 04" N	075° 54' 34" W
31	33	36° 57' 14" N	075° 54' 05" W
31	33	36° 57' 23" N	075° 53' 22" W
29	31	36° 57' 40" N	075° 53' 20" W
35	37	36° 57' 14" N	075° 52' 05" W
33	35	36° 57' 47" N	075° 52' 03" W
30	32	36° 58' 13" N	075° 52' 06" W
34	36	36° 57' 46" N	075° 51' 06" W
34	36	36° 58' 01" N	075° 49' 49" W

Survey data indicate a southerly migration of the 30-ft curve. This shoal is encroaching on the inbound lane of the northeast channel. A revised 30-ft contour was the subject of a DTON

submitted on July 10, 2001. The location of this 30-ft curve is defined by a line connecting the following geographic positions. ***Concur – with clarification – curve redrawn during office processing.***

From west end of survey area:
36° 57' 11.51" N, 075° 56' 21.96" W
36° 57' 07.16" N, 075° 55' 10.66" W
36° 57' 27.86" N, 075° 53' 40.89" W
36° 57' 39.61" N, 075° 53' 03.02" W
36° 57' 46.89" N, 075° 52' 49.97" W
36° 58' 07.71" N, 075° 52' 09.54" W
36° 58' 25.33" N, 075° 51' 50.13" W
36° 59' 08.28" N, 075° 51' 44.44" W

Areas South and East of the Traffic Separation Scheme

Surveyed areas south and east of the traffic separation scheme agreed well with the charted soundings. Two shoal areas in this area of the survey were developed with VBES splits by the WHITING. These VBES splits were run to better define the 36-ft contour. Surveyed soundings in these two areas were less than one foot shoaler than charted depths.

Areas North and West of the Traffic Separation Scheme

Surveyed areas north and west of the traffic separation scheme agreed well with the charted soundings. Serious discrepancies are addressed in the "Dangers to Navigation" section.

AWOIS Items and Significant Contacts

There were three AWOIS items addressed by this survey. There was one additional contact found. Each of these features are discussed in this section.

AWOIS: 8253

Item Description: Obstruction

Source: H10372/90– OPR-D111-HE (Formerly FE-356SS), FE412SS/95– OPR-E696-HE

Item Position: Lat. 36° 56' 27.47" N, Long. 075° 55' 29.86" W

Required Investigation: None **Item Status:** Completed

Charts Affected: 12280, 12221, 12222, 12208

INVESTIGATION

Contact No: 131_1851_0003, 132_1548_0001, 233_0252_0001

DN:101 & 103

Least Depth Position Number:

Investigation Used: 200% SSS

Surveyed Position: Lat. 36° 56' 27.543" N, Long. 075° 55' 29.607" W ***-SIDE SCAN POSITION***
Position Determined By: Differential GPS

Investigation Summary: This item was identified during mainscheme side scan operations. The contact was located at the AWOIS-defined position. The calculated height of the obstruction was determined to be approximately 1.26 m (4.1 ft) in surrounding depths of 44 to 45 ft. The calculated height is consistent with the charted 41 ft least depth. Due to the limited time available to complete this project, no least depth could be determined by echosounder or diver.

CHARTING RECOMMENDATION

Recommendations: The hydrographer recommends retaining the charted 41 ft obstruction. ***CONCUR - - RETAIN AS CHARTED - NOT BROUGHT FORWARD FROM PRIOR SURVEY. PRIOR SURVEY COMPARISON NOT REQUIRED WITH 200% SSS COVERAGE.***

AWOIS: 8323

Item Description: Obstruction

Source: H10340/90– OPR-D111-WH, FE353SS/90– OPR-D111-HE, FE412SS/95– OPR-E686-HE

Item Position: Lat. 36° 55' 49.23" N, Long. 075° 54' 50.33" W

Required Investigation: None **Item Status:** Completed

Charts Affected: 12280, 12221, 12222, 12208, 12207

INVESTIGATION

Contact No: 224_2204_0001

DN: 106

Least Depth Position Number: N/A

Investigation Used: 200% SSS

Surveyed Position: Lat. 36° 55' 49.288" N, Long. 075° 54' 50.640" W ***-SIDE SCAN POSITION***

Position Determined By: Differential GPS

Investigation Summary: This item was identified during mainscheme side scan operations. The contact was located at the AWOIS-defined position. The calculated height of the obstruction was determined to be approximately 0.79 m (2.6 ft) in surrounding depths of 47 ft. The calculated height is consistent with the charted 44 ft least depth. Due to the limited time available to complete this project, no least depth could be determined by echosounder or diver..

CHARTING RECOMMENDATION

Recommendations: The hydrographer recommends retaining the charted 44 ft obstruction . ***CONCUR - - RETAIN AS CHARTED - NOT BROUGHT FORWARD FROM PRIOR SURVEY. PRIOR SURVEY COMPARISON NOT REQUIRED WITH 200% SSS COVERAGE.***

AWOIS: 8324

Item Description: Obstruction

Source: H10340/90–OPR-D111-WH, FE353SS/90–OPR-D111-HE, FE412SS/95–OPR-E696-HE

Item Position: Lat. 36° 56' 01.59" N, Long. 075° 54' 58.69" W

Required Investigation: None **Item Status:** Completed

Charts Affected: 12280, 12221, 12222, 12208

INVESTIGATION

Contact No: 139_1534_0001, 226_1843_0001

DN: 096 & 106

Least Depth Position Number: N/A

Investigation Used: 200% SSS

Surveyed Position: Lat. 36° 55' 58.391" N, Long. 075° 54' 56.578" W -***SIDE SCAN POSITION***

Position Determined By: Differential GPS

Investigation Summary: This item was identified during mainscheme side scan operations. The contacts were located at the AWOIS-defined position. The calculated height of the obstruction was determined to be approximately 0.94 m (3.1 ft) in surrounding depths of 44 to 46 ft. The calculated height is consistent with the charted 42 ft least depth. Due to the limited time available to complete this project, no least depth could be determined by echosounder or diver..

CHARTING RECOMMENDATION

Recommendations: The hydrographer recommends retaining the charted 42 ft obstruction. ***CONCUR - - RETAIN AS CHARTED - NOT BROUGHT FORWARD FROM PRIOR SURVEY. PRIOR SURVEY COMPARISON NOT REQUIRED WITH 200% SSS COVERAGE.***

Item: Obstruction

Item Description: Obstruction

Source: N/A

Item Position: N/A

Required Investigation: None **Radius:** N/A

Charts Affected: 12280, 12221, 12208, 12207

INVESTIGATION

Contact: 206_1509_0001, 605_2032_0001, 606_2019_0001

DN: 102, 191

Least Depth Position Number: 601_1935_929_11

Investigation Used: 200% SSS (DN 102, 191), SWMB (DN 191)

Surveyed Position: Lat. 36° 55' 31.58" N, Long. 075° 50' 09.44"W

Position Determined By: Differential GPS

Investigation Summary: This contact was identified during mainscheme side scan operations (DN 102, contact 206_1509_0001). This item was developed with SWMB by survey Launch 1005. The least depth of the obstruction was 10.35 m (34 ft). Surrounding depths were found to be approximately 11.3 m (37 ft).

CHARTING RECOMMENDATION

Recommendations: The hydrographer recommends charting an obstruction at the surveyed position.. ***CONCUR - - CHART 34 OBSTN WITH DANGER CURVE***

Dangers to Navigation

Two items were submitted as Dangers to Navigation associated with this survey. A third item was investigated July 10, 2001. This item was submitted as a Danger to Navigation. For a complete listing, see Appendix I.

D.2. ADDITIONAL RESULTS

Aids to Navigation (ATON's) and Other Detached Positions

The following is a list of ATON's located in the *Light List* and on chart 12208. All ATON were found to be on station and serving their intended purpose.

ATON	*Light List* #	Latitude	Longitude
Y "NCD" buoy	400	36° 56' 48" N	075° 55' 06" W
Y "NCC" buoy	395	36° 57' 24" N	075° 53' 00" W
Y "NCB" buoy	390	36° 58' 00" N	075° 50' 48" W
Y "NCA" buoy	385	36° 58' 42" N	075° 48' 36" W

There were no requirements for shoreline verification on this survey.

E. APPROVAL SHEET

OPR-D324-WH
Northeast Approach to Chesapeake Bay, Virginia

6 Nautical Miles Northeast of Cape Henry
Survey Registry No. H11027

Field operations for this basic hydrographic survey were conducted under my daily supervision with frequent checks of progress and adequacy. All field sheets, this Descriptive Report, and all accompanying records and data are approved.

This survey is adequate to supersede all prior surveys in common areas, and for application to the relevant NOS nautical charts.

Submitted: _____
LTJG Jason Seifert, NOAA
Junior Officer

_____
LT Richard T. Brennan, NOAA
Field Operations Officer

Approved and Forwarded: _____
LCDR Gerd F. Glang, NOAA
Commanding Officer

APPENDIX I

DANGERS TO NAVIGATION REPORTS

January 18, 2002

REPORT OF DANGER TO NAVIGATION

Survey Registry Number: **H11027**

State: Virginia
Locality: North Atlantic Ocean
Sub-Locality: 6 Nautical Miles Northeast of Cape Henry

Project Number: OPR-D324-WH
Survey Date(s): April 2 - April 17, 2001 and July 10, 2001

Soundings are reduced to Mean Lower Low Water (MLLW) using Verified Water Levels. Horizontal datum is NAD 83.

Chart(s) Affected:
12205, 26th edition, December 16, 2000, 1:80,000
12208, 7th edition, December 5, 1998, 1:50,000
12221, 71st edition, August 5, 2000 1:80,000
12280, 1st edition, May 25, 1996 1:200,000

DANGER TO NAVIGATION

An obstruction with a least depth of 10.35 m (34 ft) was found at 36/55/31.58N, 075/50/09.44W. Surrounding depths were found to be approximately 11.3 m (37 ft).

Questions concerning this report should be directed to the Chief, Atlantic Hydrographic Branch at (757)441-6746.

18 January 2002

REPORT OF DANGERS TO NAVIGATION

Survey Registry Number: **H11027**

State: Virginia
Locality: North Atlantic Ocean
Sub-Locality: 6 Nautical Miles Northeast of Cape Henry

Project Number: OPR-D324-WH
Survey Date(s): April 2 - April 17, 2001

Soundings are reduced to Mean Lower Low Water (MLLW) using Verified Water Levels. Horizontal datum is NAD 83.

Chart(s) Affected:
12205, 26th edition, December 16, 2000, 1:80,000
12208, 7th edition, December 5, 1998, 1:50,000
12221, 71st edition, August 5, 2000 1:80,000
12222, 41st edition, December 16, 2000 1:40,000
12280, 1st edition, May 25, 1996 1:200,000

DANGERS TO NAVIGATION

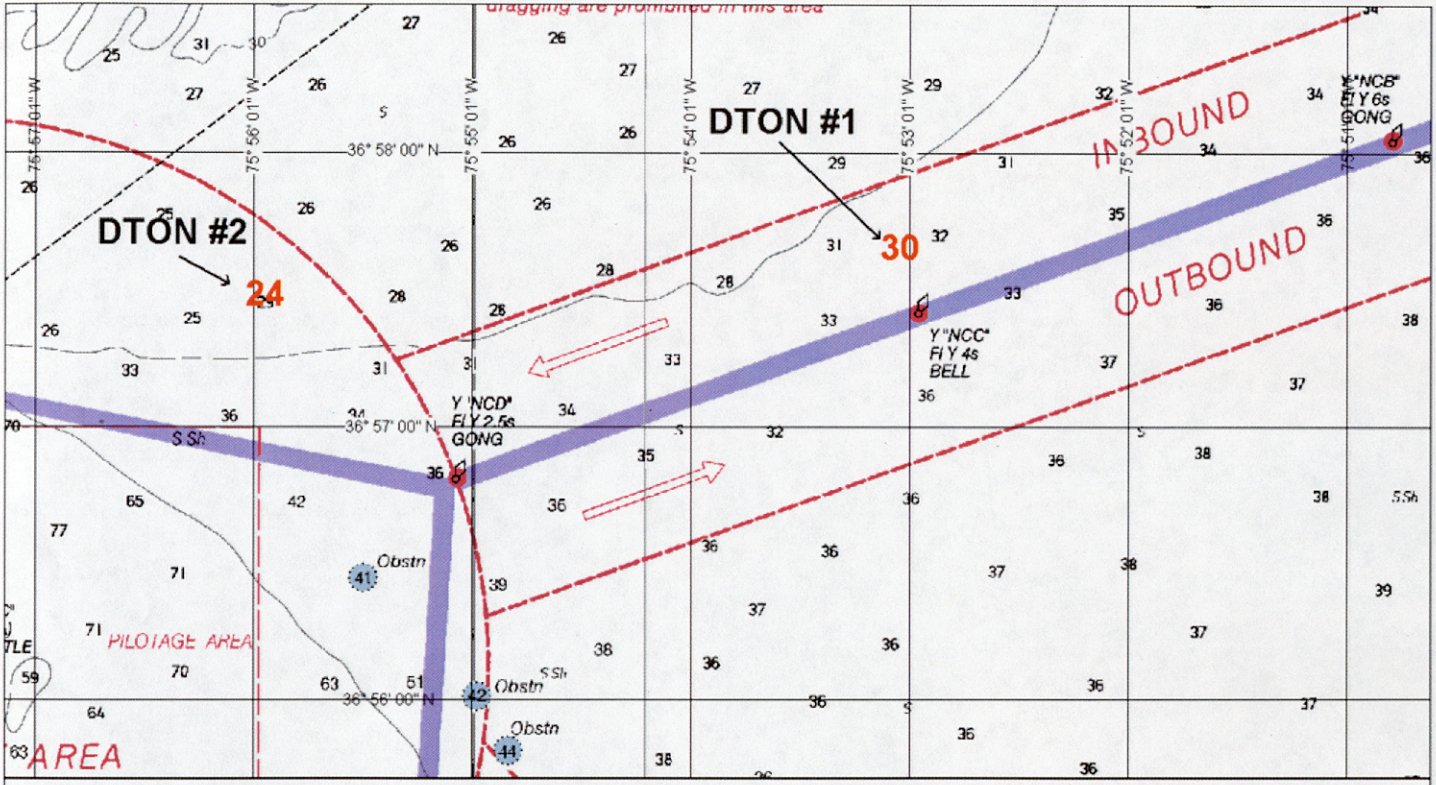
DTON #1 A 30 ft depth was found outside of the existing 30 ft curve.

DTON	FEATURE	DEPTH (FT)	LATITUDE (N)	LONGITUDE (W)
1	Sounding	30-ft	36/57/39.61	075/53/03.02

DTON #2 A 24 ft depth was found at the location of a charted 29 ft depth.

DTON	FEATURE	DEPTH (FT)	LATITUDE (N)	LONGITUDE (W)
2	Sounding	24 ft/7.3m	36/57/29.08	075/55/56.89

Questions concerning this report should be directed to the Chief, Atlantic Hydrographic Branch at (757)441-6746.



Chartlet 1 of 1 *Dangers To Navigation, OPR-D324-WH, H11027, Approaches to Chesapeake Bay 12208, 7th edition, December 5, 1998, 1:10,000*

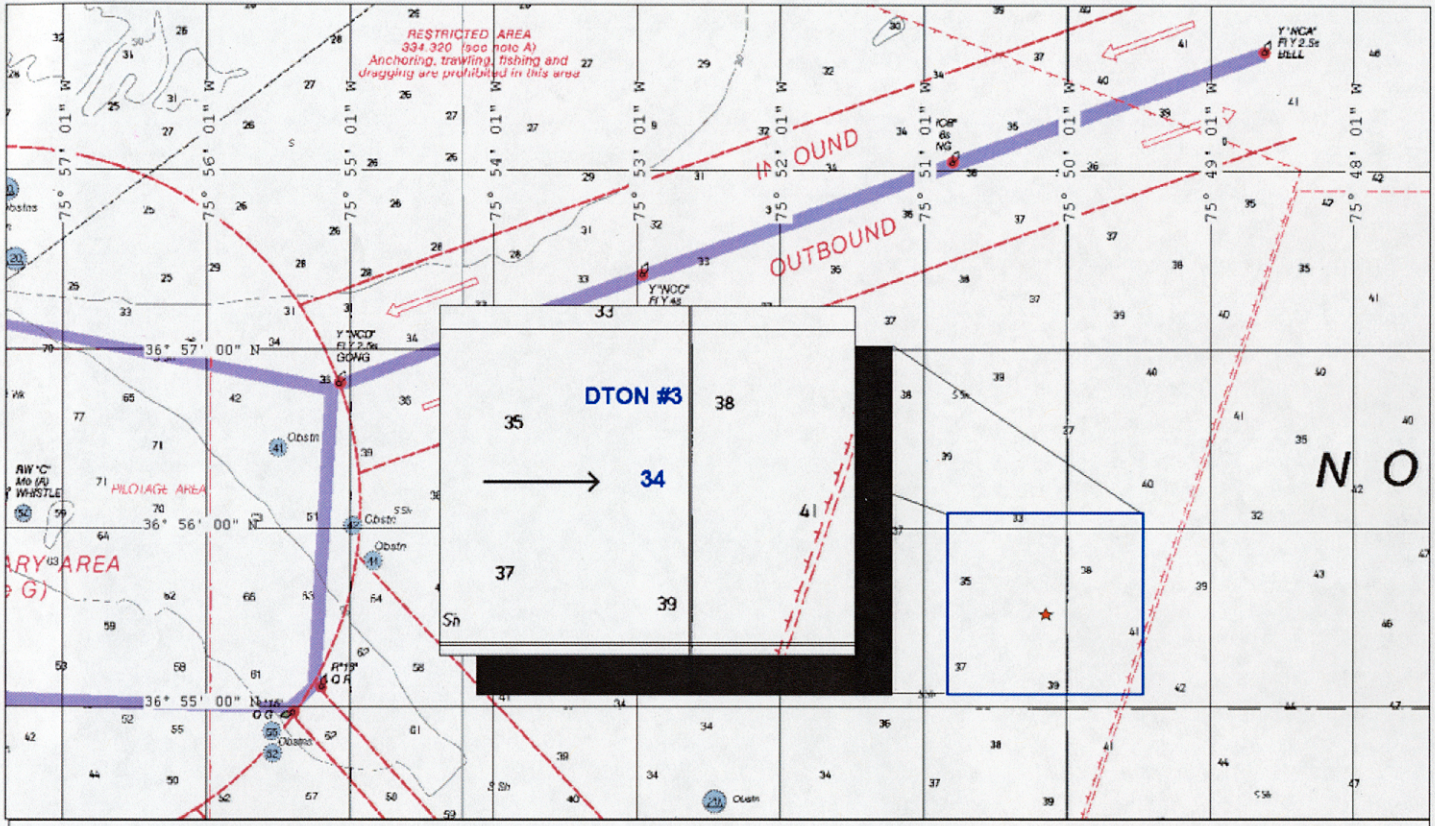
This chartlet may not be up to date with the latest Local Notice to Mariners information.
NOT FOR NAVIGATION.

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

Project: *OPR-D324-WH*
Survey: *H11027*
State: *Virginia*
Locality: *North Atlantic Ocean*
Sub-locality: *6 Nautical Miles Northeast of Cape Henry*
Survey Scale: *1:10,000*

Soundings Displayed in: *Feet*
Soundings Acquired in: *Meters*
Sounding Datum: *MLLW*
Horizontal Datum: *NAD 83*
Projection: *UTM 18*
Central Meridian: *075° 00 00*
Scale Factor: *0.9996*

NOAA Ship WHITING
LCDR Gerd F. Glang
Commanding
April 2 to
April 17, 2001



Chartlet 1 of 1 *Danger To Navigation, OPR-D324-WH, H11027, Approaches to Chesapeake Bay 12208, 7th edition, December 5, 1998, 1:10,000*

This chartlet is corrected through 06/23/01.
NOT FOR NAVIGATION.

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

Project: *OPR-D324-WH*
Survey: *H11027*
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Central Meridian: *075° 00 00*
Scale Factor: *0.9996*

NOAA Ship WHITING
LCDR Gerd F. Glang
Commanding

April 2 to April 17
and July 10, 2001

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Silver Spring, Maryland 20910

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: June 29, 2001

HYDROGRAPHIC BRANCH: Atlantic
HYDROGRAPHIC PROJECT: OPR-D324-WH-2001
HYDROGRAPHIC SHEET: H11027

LOCALITY: Northeast Approaches to Chesapeake Bay, VA
TIME PERIOD: April 2 - April 17, 2001

TIDE STATION USED: 863-8863 Chesapeake Bay Bridge Tunnel, VA
Lat. 36° 58.0'N Lon. 76° 6.8'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 0.829 meters

REMARKS: RECOMMENDED ZONING
Use zone(s) identified as: ATL724 & ATL725

Refer to attachments for zoning information.

Note 1: Provided time series data are tabulated in metric units (meters), relative to MLLW and on Greenwich Mean Time.

For ----------
CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Silver Spring, Maryland 20910

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: August 28, 2001

HYDROGRAPHIC BRANCH: Atlantic
HYDROGRAPHIC PROJECT: OPR-D324-WH-2001
HYDROGRAPHIC SHEET: H11027

LOCALITY: Northeast Approach to Chesapeake Bay, VA
TIME PERIOD: July 10, 2001

TIDE STATION USED: 863-8863 Chesapeake Bay Bridge Tunnel, VA
Lat. 36° 58.0'N Lon. 76° 6.8'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 0.829 meters

REMARKS: RECOMMENDED ZONING
Use zone(s) identified as: ATL724 & ATL725

Refer to attachments for zoning information.

Note 1: Provided time series data are tabulated in metric units (meters), relative to MLLW and on Greenwich Mean Time.

Thomas C. Meier 8/29/01

CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION

NOAA FORM 61-29
(12-71)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

REFERENCE NO.
N/CS33-43-01

LETTER TRANSMITTING DATA

DATA AS LISTED BELOW WERE FORWARDED TO YOU BY (Check)

☐ ORDINARY MAIL ☐ AIR MAIL
☐ REGISTERED MAIL ☒ EXPRESS
☐ GBL (Give number)_____

DATE FORWARDED 02/12/2002

NUMBER OF PACKAGES 1

TO:

CHIEF, DATA CONTROL GROUP, N/CS3x1
NOAA / NATIONAL OCEAN SERVICE
STATION 6815, SSMC3
1315 EAST-WEST HIGHWAY
SILVER SPRING, MARYLAND 20910-3282

NOTE: A separate transmittal letter is to be used for each type of data, as tidal data, seismology, geomagnetism, etc. State the number of packages and include an executed copy of the transmittal letter in each package. In addition the original and one copy of the letter should be sent under separate cover. The copy will be returned as a receipt. This form should not be used for correspondence or transmitting accounting documents.

H11027

Virginia, North Atlantic Ocean, 6 Nautical Miles Northeast of Cape Henry

ONE TUBE CONTAINING THE FOLLOWING:

1 SMOOTH SHEET FOR SURVEY H11027
1 ORIGINAL DESCRIPTIVE REPORT
1 RECORD OF APPLICATION TO CHART FORM (NOAA FORM #75-96)
1 H-DRAWING ON MYLAR FOR NOS CHART 12222
1 H-DRAWING ON MYLAR FOR NOS CHART 12208
1 VERTICAL MAPPER PLOT ON MYLAR OF H11027

FROM: (Signature) Richard Bluris

RECEIVED THE ABOVE
(Name, Division, Date)

Return receipted copy to:

NOAA \ NATIONAL OCEAN SERVICE
ATLANTIC HYDROGRAPHIC BRANCH N/CS33
439 WEST YORK STREET
NORFOLK, VA. 23510-1114

NOAA FORM 61-29 SUPERCEDES FORM C AND GS 413 WHICH MAY BE USED.

U.S. GOVERNMENT PRINTING OFFICE: 1988 - 554-006-61309

ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT FOR H11027 (2000)

This Evaluation Report has been written to supplement and/or clarify the original Descriptive Report. Sections in this report refer to the corresponding sections of the Descriptive Report.

B. AUTOMATED DATA ACQUISITION AND PROCESSING

The following software was used to process data at the Atlantic Hydrographic Branch:

Hydrographic Processing System
NADCON, version 2.10
MicroStation 95, version 5.05
I/RAS B, version 5.01
CARIS HIPS/SIPS
PYDRO, version 1.11

The smooth sheet was plotted using a Hewlett Packard DesignJet 2500CP plotter.

JUNCTIONS

H11016 (2000) within the limits of H11027

A standard junction could not be effected between the present survey and survey H11016 (2000). The present survey encompasses survey H11016 (2000). The present survey is adequate to supersede the prior survey within the common area.

There are no junctional surveys to the north, south, east, and west. Present survey depths are in harmony with the charted hydrography to the north, south, east, and west.

B.3 CORRECTIONS TO ECHO SOUNDING

During office processing, a comparison of depths between the NOAA Ship Whiting and launch 1014 revealed some minor differences. These differences appear to have been created by the heave, pitch, and roll problems described in section **B.3** of the Descriptive Report. Even though these difference exist, the survey is considered adequate and the data acceptable for charting purposes.

C. CONTROL STATIONS

Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983

(NAD 83). Office processing of this survey is based on these values. The smooth sheet has been annotated with ticks showing the computed mean shift between the NAD 83 and the North American Datum of 1927 (NAD 27).

To place this survey on the NAD 27, move the projection lines 0.530 seconds (16.346 meters or 1.63 mm at the scale of the survey) north in latitude, and 1.268 seconds (31.366 meters or 3.14 mm at the scale of the survey) east in longitude.

D.1 COMPARISON WITH CHART 12208 (7th Edition, DEC. 5/98) 12222 (41st Edition, DEC. 16/00)

Hydrography

The charted hydrography originates with prior surveys and requires no further consideration. The hydrographer makes an adequate chart comparison in section D. of the Descriptive Report.

Dangers to Navigation

Two Danger to Navigation reports, containing three items, were submitted to Commander(oan), Fifth Coast Guard District, Portsmouth, Virginia for inclusion in the Local Notice to Mariners, and to the Marine Chart Division, N/CS3x1, Silver Spring, Maryland. Copies of these reports are appended to the Descriptive Report.

The present survey is adequate to supersede the charted hydrography within the common area.

MISCELLANEOUS

Chart compilation was done by Atlantic Hydrographic Branch personnel, in Norfolk, Virginia. Compilation data will be forwarded to Marine Chart Division, Silver Spring, Maryland. The following NOS Charts were used for compilation Of the present survey:

12208 (7th Edition, Dec. 5/98)
12222 (41st Edition, Dec. 16/00)

COMPARISON WITH PRIOR SURVEYS

A comparison with prior surveys was not done during office processing in accordance with section 4. of the memorandum titled "Changes to Hydrographic Survey Processing", dated May 24, 1995.

ADEQUACY OF SURVEY

This is an adequate hydrographic/side scan sonar/multibeam survey. No additional field work is recommended.

Robert Snow

Robert Snow
Cartographic Technician
Verification of Field Data
Evaluation and Analysis

APPROVAL SHEET
H11027

Initial Approvals:

The completed survey has been inspected with regard to survey coverage, delineation of depth curves, development of critical depths, cartographic symbolization, and verification or disproval of charted data. The digital data have been completed and all revisions and additions made to the smooth sheet during survey processing have been entered in the digital data for this survey. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

Richard W. Blevins Date: 07 JAN 2002

Richard W. Blevins
Cartographer
Atlantic Hydrographic Branch

I have reviewed the smooth sheet, accompanying data, and reports. This survey and accompanying digital data meet or exceed NOS requirements and standards for products in support of nautical charting except where noted in the Evaluation Report.

James S. Verlaque Date: 15 JAN 2002

James S. Verlaque
Lieutenant Commander, NOAA
Chief, Atlantic Hydrographic Branch

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Final Approval:

Approved: Samuel P. De Bow Jr. Date: July 13, 2002

Samuel P. De Bow, Jr.
Captain, NOAA
Chief, Hydrographic Surveys Division

NOAA FORM 75-96
(10-83)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H11027

INSTRUCTIONS

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.

1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
12222	1/24/02	Richard Blouin	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No.
12208	1/24/02	Richard Blouin	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
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			Full Part Before After Marine Center Approval Signed Via
			Drawing No.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED.